Intermonal Application No
PCT/DE2005/000428

|   |   | <del></del>                                 |                       |  |  |  |
|---|---|---|-----------------------|--|--|--|
| A. CLASSI<br>IPC 7  | FICATION OF SUBJECT MATTER H01L31/0216 H01L31/068   |   |                       |  |  |  |
| According to  | o International Patent Classification (IPC) or to both national classifica  | ation and IPC                               |                       |  |  |  |
|   | SEARCHED  |   |                       |  |  |  |
|   | cumentation searched (classification system followed by classification  | on symbols)                                 |                       |  |  |  |
| IPC 7   | H01L  |   |                       |  |  |  |
| Documentat  | ion searched other than minimum documentation to the extent that su   | uch documents are included in the fields se | parched               |  |  |  |
| Electronic d  | ata base consulted during the international search (name of data bas  | se and, where practical, search terms used  | ) .                   |  |  |  |
| Electronic data base consulted during the international search (name of data base and, where practical, search terms used)  EPO-Internal  |   |   |                       |  |  |  |
| C. DOCUMI   | ENTS CONSIDERED TO BE RELEVANT  |   |                       |  |  |  |
| Category °  | Citation of document, with indication, where appropriate, of the rele   | evant passages                              | Relevant to claim No. |  |  |  |
| X .   | US 4 820 915 A (HAMAKAWA ET AL)<br>11 April 1989 (1989-04-11)<br>the whole document   |   | 1-29                  |  |  |  |
| х   | US 5 406 067 A (KELLER ET AL)<br>11 April 1995 (1995-04-11)<br>the whole document   |   | 5–29                  |  |  |  |
| Х   | US 4 451 691 A (FRAAS ET AL)<br>29 May 1984 (1984-05-29)<br>abstract  |   | 3,5,11                |  |  |  |
| х   | US 4 713 493 A (OVSHINSKY ET AL)<br>15 December 1987 (1987-12-15)<br>abstract   |   | 1-4                   |  |  |  |
| х   | EP 0 509 215 A (CANON KABUSHIKI K<br>21 October 1992 (1992-10-21)<br>abstract   | AISHA)                                      | 1                     |  |  |  |
| Furt  | ler documents are listed in the continuation of box C.  | X Patent family members are listed in       | n annex.              |  |  |  |
| ° Special ca  | tenades of cited documents :  |   |                       |  |  |  |
| *T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the   |   |   |                       |  |  |  |
| considered to be of particular relevance Invention  "E" earlier document but published on or after the International "X" document of particular relevance; the claimed invention  |   |   |                       |  |  |  |
| "L" docume<br>which   | filing date  "L" document which may throw doubts on priority claim(s) or  which is cited to establish the publication date of another  "cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone  "Y" document of particular relevance; the claimed invention |   |                       |  |  |  |
| citation or other special reason (as specified)  cannot be considered to involve an inventive step when the document referring to an oral disclosure, use, exhibition or document is combined with one or more other such documents.  |   |   |                       |  |  |  |
| other in the country of the country |   |   |                       |  |  |  |
| later than the priority date claimed "&" document member of the same patent family  Date of the actual completion of the international search  Date of mailing of the international search report   |   |   |                       |  |  |  |
| 1   | 3 July 2005   | 27/07/2005                                  |                       |  |  |  |
| Name and  | mailing address of the ISA<br>European Patent Office, P.B. 5818 Patentlaan 2  | Authorized officer                          |                       |  |  |  |
|   | NL – 2280 HV Rijswijk<br>Tel. (+31–70) 340–2040, Tx. 31 651 epo nl,<br>Fax: (+31–70) 340–3016   | Werner, A                                   |                       |  |  |  |

Information on patent family members

Intermonal Application No
PCT/DE2005/000428

|   |     |                  |    |                         | ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ |
|---|-----|------------------|----|-------------------------|--|
| Patent document<br>cited in search report |     | Publication date |    | Patent family member(s) | Publication date                       |
| US 4820915                                | A   | 11-04-1989       | JP | 1828218 C               | 15-03-1994                             |
| 03 4020313                                | ^   | 11 04 1505       | JP | 63094125 A              | 25-04-1988                             |
|   |     |                  |    |                         |  |
| US 5406067                                | Α   | 11-04-1995       | JР | 2762390 B2              | 04-06-1998                             |
| 00 5 100007                               | ••  |                  | JP | 7318423 A               | 08-12-1995                             |
|   |     |                  |    |                         |  |
| US 4451691                                | Α   | 29-05-1984       | US | 4404421 A               | 13-09-1983                             |
|   |     |                  | ΑU | 559708 B2               | 19-03-1987                             |
|   |     |                  | ΑU | 1169883 A               | 01-09-1983                             |
|   |     |                  | CA | 1207422 A1              | 08-07-1986                             |
|   |     |                  | DE | 3306725 Al              | 22-09-1983                             |
|   |     |                  | ES | 8406797 Al              | 01-11-1984                             |
|   |     |                  | ES | 8503891 Al              | 16-06-1985                             |
|   |     |                  | FR | 2522444 A1              | 02-09-1983                             |
|   |     |                  | GB | 2116365 A ,B            | 21-09-1983                             |
|   |     |                  | ΙL | 67982 A                 | 31-08-1986                             |
|   |     |                  | IN | 158004 A1               | 16-08-1986                             |
|   |     |                  | NL | 8300715 A               | 16-09-1983                             |
|   |     |                  | JP | 1682389 C               | 31-07-1992                             |
|   |     |                  | JP | 3048672 B               | 25-07-1991                             |
|   |     |                  | JP | 58180071 A              | 21-10-1983                             |
| US 4713493                                | Α   | 15-12-1987       | US | 4642413 A               | 10-02-1987                             |
|   | • • |                  | ΑT | 92212 T                 | 15-08-1993                             |
|   |     |                  | ΑU | 6350886 A               | 16-04-1987                             |
|   |     |                  | CA | 1268973 A1              | 15-05-1990                             |
|   |     |                  | DE | 3688772 D1              | 02-09-1993                             |
| •   |     |                  | DE | 3688772 T2              | 11-11-1993                             |
| •   |     |                  | EP | 0218997 A2              | 22-04-1987                             |
|   |     |                  | IN | 166970 A1               | 11-08-1990                             |
|   |     |                  | JP | 2752924 B2              | 18-05-1998                             |
|   |     |                  | JP | 8056007 A               | 27-02-1996                             |
|   |     |                  | JP | 2575667 B2              | 29-01-1997                             |
|   |     |                  | JP | 62093982 A              | 30-04-1987                             |
|   |     |                  | KR | 9500109 B1              | 09-01-1995                             |
| EP 0509215                                | Α   | 21-10-1992       | JP | 2999280 B2              | 17-01-2000                             |
| FI 0009510                                | А   | £1 10 1992       | JP | 4267568 A               | 24-09-1992                             |
|   |     |                  | DE | 69212367 D1             | 29-08-1996                             |
|   |     |                  | DE | 69212367 T2             | 02-01-1997                             |
|   |     |                  |    |                         | 21-10-1992                             |
|   |     |                  | EP | 0509215 Al              | £1 10 133£                             |

Intermediation No
PCT/DE2005/000428

| A. CLASSI<br>IPC 7  | FICATION OF SUBJECT MATTER H01L31/0216 H01L31/068   |                                       |                      |  |  |  |  |
|---|---|---------------------------------------|----------------------|--|--|--|--|
| According to International Patent Classification (IPC) or to both national classification and IPC   |   |                                       |                      |  |  |  |  |
|   | SEARCHED  |                                       |                      |  |  |  |  |
|   | cumentation searched (classification system followed by classification $H01L$   | on symbols)                           |                      |  |  |  |  |
| Documental  | tion searched other than minimum documentation to the extent that s   | uch documents are included in the fie | elds searched        |  |  |  |  |
| Electronic d  | ata base consulted during the international search (name of data base   | se and, where practical, search terms | s used)              |  |  |  |  |
| EPO-In  | ternal  |                                       | 1                    |  |  |  |  |
| C. DOCUM  | ENTS CONSIDERED TO BE RELEVANT  |                                       |                      |  |  |  |  |
| Category *  | Citation of document, with indication, where appropriate, of the reli   | evant passages                        | Relevant to daim No. |  |  |  |  |
| Julicyony   |   | <u> </u>                              |                      |  |  |  |  |
| X .   | US 4 820 915 A (HAMAKAWA ET AL)<br>11 April 1989 (1989-04-11)<br>the whole document   |                                       | 1-29                 |  |  |  |  |
| X   | US 5 406 067 A (KELLER ET AL) 11 April 1995 (1995-04-11) the whole document   |                                       | 5-29                 |  |  |  |  |
| X   | US 4 451 691 A (FRAAS ET AL)<br>29 May 1984 (1984-05-29)<br>abstract  |                                       | 3,5,11               |  |  |  |  |
| χ   | US 4 713 493 A (OVSHINSKY ET AL)<br>15 December 1987 (1987-12-15)<br>abstract   |                                       | 1-4                  |  |  |  |  |
| X   | EP 0 509 215 A (CANON KABUSHIKI K<br>21 October 1992 (1992-10-21)<br>abstract   | (AISHA)                               | 1                    |  |  |  |  |
| Furth   | ner documents are listed in the continuation of box C.  | X Patent family members are           | listed in annex.     |  |  |  |  |
| Special categories of cited documents:  The last degrees of cited documents:  |   |                                       |                      |  |  |  |  |
| "A" document defining the general state of the art which is not considered to be of particular relevance  "Bater document published after the international ming date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention  |   |                                       |                      |  |  |  |  |
| "E" earlier document but published on or after the international filing date  "X" document of particular relevance; the claimed invention cannot be considered to   |   |                                       |                      |  |  |  |  |
| "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) involve an inventive step when the document is taken alone document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the   |   |                                       |                      |  |  |  |  |
| "O" document referring to an oral disclosure, use, exhibition or other means document is combined with one or more other such document of the means document is combined with one or more other such document is combined with one or more other such document is combined with one or more other such document is combined with one or more other such document is combined with one or more other such document is combined with one or more other such document is combined with one or more other such document is combined with one or more other such document is combined with one or more other such document is combined with one or more other such document is combined with one or more other such document is combined with one or more other such document is combined with one or more other such documents. |   |                                       |                      |  |  |  |  |
| "P" document published prior to the International filling date but later than the priority date claimed "&" document member of the same patent family   |   |                                       |                      |  |  |  |  |
| Date of the actual completion of the international search  Date of mailing of the international search report   |   |                                       |                      |  |  |  |  |
| 1:  | 3 July 2005   | 27/07/2005                            |                      |  |  |  |  |
| Name and n  | nalling address of the ISA  | Authorized officer                    |                      |  |  |  |  |
|   | European Patent Office, P.B. 5818 Patentlaan 2<br>NL - 2280 HV Rijswijk<br>Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,<br>Fax: (+31-70) 340-3016 | Werner, A                             |                      |  |  |  |  |

Information on patent family members

Intermonel Application No PCT/DE2005/000428

| Patent document cited in search report | Ī | Publication date |    | Patent family<br>member(s) |        | Publication date |
|--|---|------------------|----|----------------------------|--------|------------------|
| US 4820915                             |   | 11-04-1989       | JP | 1828218 (                  |        | 15-03-1994       |
|  |   |                  | JP | 63094125 /                 | 1      | 25-04-1988       |
| US 5406067                             | Α | 11-04-1995       | JP | 2762390 E                  |        | 04-06-1998       |
|  |   |                  | JP | 7318423 <i>F</i>           | 4      | 08-12-1995       |
| US 4451691                             | Α | 29-05-1984       | US | 4404421 /                  |        | 13-09-1983       |
|  |   |                  | AU | 559708                     |        | 19-03-1987       |
|  |   |                  | ΑU | 1169883 /                  |        | 01-09-1983       |
|  |   |                  | CA | 1207422                    |        | 08-07-1986       |
|  |   |                  | DE | 3306725 /                  |        | 22-09-1983       |
|  |   |                  | ES | 8406797                    |        | 01-11-1984       |
| •                                      |   |                  | ES | 8503891 /                  |        | 16-06-1985       |
|  |   |                  | FR | 2522444                    |        | 02-09-1983       |
|  |   |                  | GB | 2116365                    |        | 21-09-1983       |
|  |   |                  | ΙL | 67982                      |        | 31-08-1986       |
|  |   |                  | IN | 158004 /                   |        | 16-08-1986       |
|  |   |                  | NL | 8300715 /                  |        | 16-09-1983       |
|  |   |                  | JP | 1682389 (                  |        | 31-07-1992       |
|  |   |                  | JP | 3048672                    |        | 25-07-1991       |
|  |   |                  | JP | 58180071 <i>/</i>          | 4<br>  | 21-10-1983       |
| US 4713493                             | Α | 15-12-1987       | US | 4642413                    |        | 10-02-1987       |
|  |   |                  | ΑŢ | 92212                      |        | 15-08-1993       |
|  |   |                  | AU | 6350886                    |        | 16-04-1987       |
|  |   |                  | CA | 1268973                    |        | 15-05-1990       |
|  |   |                  | DE | 3688772                    |        | 02-09-1993       |
|  |   |                  | DE | 3688772                    |        | 11-11-1993       |
| •                                      |   |                  | EP | 0218997                    |        | 22-04-1987       |
|  |   |                  | IN | 166970                     |        | 11-08-1990       |
|  |   |                  | JP | 2752924                    |        | 18-05-1998       |
|  |   |                  | JP | 8056007                    | -      | 27-02-1996       |
|  |   |                  | JP | 2575667                    |        | 29-01-1997       |
|  |   |                  | JP | 62093982                   |        | 30-04-1987       |
|  |   |                  | KR | 9500109                    | B1<br> | 09-01-1995       |
| EP 0509215                             | A | 21-10-1992       | JP | 2999280                    |        | 17-01-2000       |
|  |   |                  | JP | 4267568                    |        | 24-09-1992       |
|  |   |                  | DE | 69212367                   |        | 29-08-1996       |
|  |   |                  | DE | 69212367                   |        | 02-01-1997       |
|  |   |                  | EP | 0509215                    |        | 21-10-1992       |
|  |   |                  | US | 5279679                    | Λ      | 18-01-1994       |